

We claim:

1. An elastomeric static gasket comprising:
 - a thin carrier member having a top surface and an opposite surface;
 - 5 a first stopper member on said top surface;
 - a second stopper member on said top surface in spaced relationship to said first stopper member; said first and second stopper members forming a cavity therebetween, and having a height above said top surface; and
 - an elastomeric seal member located in said cavity, said elastomeric seal
 - 10 member having at least one sealing bead, said sealing bead having an apex which extends from said top surface and is greater than said height of said first and second stopper members;
 - whereby when said apex is compressed to said height of said first and second stopper members, said seal member moves into the space of said
 - 15 cavity, said first stopper member forming a first stop and said second stopper member forming a second compression limiter, said first and second limits preventing said seal member from being over compressed.
2. A gasket as claimed in Claim 1 wherein said at least one sealing
- 20 bead has a shape selected from a group consisting of rectangular, square, triangular, void-volume, polygonal, semi-oval, semi-elliptical, semi-round, and truncated triangular.
3. A gasket as claimed in Claim 1 wherein the volume of said cavity
- 25 is greater than the volume of the seal member.
4. A gasket as claimed in Claim 1 wherein said elastomer is a polymer material selected from the group consisting of fluorocarbon, silicone, fluorosilicone, butyl, EPDM, ethylene-acrylate, polyacrylate, isoprene,
- 30 perfluoropolymer, natural rubber, epichlorohydrin, nitrile, hydrogenated nitrile and TPE.

5. A gasket as claimed in Claim 1 wherein said carrier member has a thickness of less than 1.0mm.

5 6. A gasket as claimed in Claim 1 wherein said carrier member has a thickness of 0.01 mm to 0.75mm.

7. A gasket as claimed in Claim 1 wherein said first stop and second limiters are at different heights above the top surface of said carrier.

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8. A gasket as claimed in Claim 1 wherein said first stop and said second limiters are made of a material selected from the group consisting of a polymer, metal, ceramic and composite fiber board.

15 9. A gasket as claimed in Claim 1 wherein said apex is compressed between 1.5% to 70%.

10. An elastomeric static gasket for sealing two mating surfaces, said static gasket comprising:

a carrier member having a top surface and an opposite surface, said carrier member having a thickness of less than 1.0mm;

5 a first pair of stopper members on said top surface, one of said first pair of stopper members in spaced relation to the other of said first pair of stopper members, the one and the other of said first pair of stopper members having a first height above said top surface;

10 a second pair of stopper members on said opposite surface, one of said second pair of stopper members in spaced relation to the other of said first pair of stopper members, the one and the other of said second pair of stopper members having second height above said opposite surface;

a first elastomeric sealing members on said top surface and first pair of stopper members, said sealing member having at least one bead; and

15 a second elastomeric sealing member on said opposite surface and interposed said second pair of stopper members, said second elastomeric sealing member having at least one sealing bead;

20 whereby when said first and second elastomeric sealing members are clamped between the two opposite mating surfaces, said at least one bead of said first elastomeric member being compressed to said first height and said at least one bead of said second elastomeric member being compressed to said second height, so that said first height and second height limit the compression on said first and second elastomeric sealing members.

25 11. An elastomeric static gasket as claimed in Claim 10 wherein said elastomeric sealing member having a cure system selected from a group consisting of addition ion cure, condensation cure, free radical cure, catalytic cure, infra-red radiation cure and ultraviolet cure.

12. A static gasket for sealing fluids, said gasket comprising:
a carrier member; and
an elastomeric polymer member is disposed on said carrier member;
a pair of stopper members are adjacent to said polymer member to prevent said
5 polymer member being over compressed, said carrier member and said
elastomeric polymer having a compressed thickness, said compressed
thickness in the range of 0.015mm to 1.75mm.

13. A static gasket as claimed in Claim 12 wherein said carrier
10 member having a thickness between 0.01 mm to 0.75mm.

14. A static gasket as claimed in Claim 12 wherein said carrier member is
selected from a group consisting of a polymeric layer, a layer of woven fabric, a
layer of non-woven fabric, a layer of metal, a gas diffusion layer, a graphite
15 plate, a proton exchange membrane, a composite fiber board, rubber coated
metal layer, and a ceramic layer.

15. A static gasket as claimed in Claim 12 wherein one of a pair of
said stopper members has a shape factor between 0.15 to 10.

16. A static gasket for sealing fluids, said gasket comprising:
a carrier member having a thickness of less than 1.75mm, said carrier member
is selected from the group including non-woven layer, woven fabric layer,
polymer layer, rubber coated metal layer, composite fiber board layer, gas
5 diffusion
layer, graphite layer, and proton exchange membrane; and
an elastomeric polymer member formed on said carrier member, said member
having at least one bead, one stopper member and a height above the surface
of said carrier member and a cure system, said cure system selected from the
10 group consisting of addition ion reaction cure, condensation cure, addition ion
exchange cure, infra-red radiation cure, ultraviolet cure and free-radical cure,
said stopper member having a shape factor between 0.10 to 100, and a sealing
bead, said sealing bead having an apex above said height, said apex being
compressed up to 80%.

17. A static gasket comprising:
a thin carrier member with a surface and having a thickness that is less than 1.75mm;

5 a first stopper member adjacent said carrier member; and
an elastomeric seal member formed on said surface of said carrier member, said stopper member preventing said seal member from being over compressed when the gasket is subjected to a clamp load.

18. The static gasket as claimed in Claim 17 wherein first stopper
10 member having a pair of compression limiters adjacent to said elastomeric polymer member, one of said pair of compression limiters on one side of said elastomeric polymer member and the other of said pair of compression limiters on the other side of said elastomeric polymer member.

15 19. The static gasket as claimed in Claim 17 wherein said first stopper member being molded on said carrier member.

20. The static gasket as claimed in Claim 17 wherein said carrier member having a one surface and an opposite surface, said elastomeric seal
20 member being formed on said one surface, and further comprising: an adhesive layer on said opposite surface of said carrier member.

21. The static gasket as claimed in Claim 18 wherein said compression limiters are selected from a group including a polymer, metal,
25 ceramic and composite fiber board.

22. The static gasket as claimed in Claim 17 wherein said stopper member having at least one compression limiter adjacent said elastomeric seal to limit the compression of said elastomeric seal member.

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23. The static gasket as claimed in Claim 17 wherein said thickness of said carrier is between 0.01 mm to 0.75mm.

24. The static gasket as claimed in Claim 17 wherein said stopper
5 member being formed of an elastomeric material, said elastomeric material having a shape factor between 0.15 to 10.

25. The static gasket as claimed in Claim 17 further comprising:
a second elastomeric seal member formed on said carrier member.

26. A method of forming an elastomeric static gasket comprising:
placing a thin carrier in the holder;
applying a polymer into a cavity in the mold halves; and
forming a rubber member on the top surface of said carrier and an
5 elastomeric seal member adjacent said first rubber member, said rubber
member having a height above the top surface of said carrier, said elastomeric
seal member having at least one sealing bead having an apex which extends
from the top surface of said carrier and is greater than said height of said rubber
member, so that when said apex is compressed to said height of said rubber
10 member, said seal member is prevented from being over compressed by said
rubber member when a clamp load is applied to the gasket.

27. The method as claimed in Claim 26 wherein said rubber stop is at the
same height above the top surface of said carrier as said elastomeric seal
15 member is in a compressed state.

28. The method as claimed in Claim 26 wherein said carrier is coated
with a primer prior to placing said carrier in a holder.

20 29. The method as claimed in Claim 26 wherein said applying step is
selected from the group including deposition, injection, transfer, formed in place,
roll coated, extruded, and screen printed.

30. The method as claimed in Claim 26 wherein said rubber member
25 having a shape factor between .15 to 10.

31. The method as claimed in Claim 26 further comprising the step of
forming a second rubber member adjacent said elastomer seal.

30 32. The method as claimed in Claim 26 wherein said carrier has a
thickness between 0.015mm to 0.75mm.

33. The method as claimed in Claim 26 wherein said polymer is a self bonding polymer.

34. The method as claimed in Claim 26 wherein said polymer material
5 is selected from a group consisting of silicone, fluorosilicone, butyl, EPDM, ethylene-acrylate, polyacrylate, isoprene, fluorocarbon, fluoropolymer, natural rubber, epichlorohydrin, nitrile, hydrogenated nitrile and TPE.

35. A method as claimed in Claim 26 further comprising:
10 applying a pressure sensitive adhesive to the bottom surface of said carrier.

36. The method as claimed in Claim 26 wherein said holder is a pair of mold cavities.
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37. The method as claimed in Claim 28 wherein said elastomeric seal member and said stopper member are made of different polymers.

38. A method of forming a static gasket comprising the step of placing
20 a thin carrier in a mold, said carrier member having a thickness of less than 1.0mm.

39. A method as claimed in Claim 37 wherein said carrier is a material selected from the group consisting of a polymeric layer, a layer of woven fabric,
25 a layer of non-woven fabric, a layer of metal, a gas diffusion layer, a graphite plate, a proton exchange membrane, a composite fiber board, a rubber coated metal layer, and a ceramic layer.